

Diseases & Conditions

Spondylolisthesis

Spondylolisthesis is a condition in which one of the bones of the spine (vertebrae) slips out of place onto the vertebra below it. If it slips too much, the bone might press on a nerve, causing pain. Usually, the bones of the lower back are affected.

The word spondylolisthesis comes from the Greek words *spondylos*, which means "spine" or "vertebra," and *listhesis*, which means "to slip or slide."

Types of spondylolisthesis

There are different types of spondylolisthesis. The more common types include.

- **Congenital spondylolisthesis** — Congenital means "present at birth." Congenital spondylolisthesis is the result of abnormal bone formation. In this case, the abnormal arrangement of the vertebrae puts them at greater risk for slipping.
- **Isthmic spondylolisthesis** — This type occurs as the result of spondylolysis, a condition that leads to small stress fractures (breaks) in the vertebrae. In some cases, the fractures weaken the bone so much that it slips out of place.
- **Degenerative spondylolisthesis** — This is the most common form of the disorder. With aging, the discs — the cushions between the vertebral bones — lose water, becoming less spongy and less able to resist movement by the vertebrae.

Less common forms of spondylolisthesis include:

- **Traumatic spondylolisthesis**, in which an injury leads to a spinal fracture or slippage
- **Pathological spondylolisthesis**, which results when the spine is weakened by disease — such as osteoporosis — an infection, or tumor
- **Post-surgical spondylolisthesis**, which refers to slippage that occurs or becomes worse after spinal surgery

How common is spondylolisthesis?

Spondylolisthesis is the most common cause of back pain in teens. Symptoms of spondylolisthesis often begin during the teen-age growth spurt. Degenerative spondylolisthesis occurs most often after age 40.

What are the symptoms of spondylolisthesis?

Many people with spondylolisthesis have no symptoms and don't even know they have the condition. When symptoms do occur, low back pain is the most common. The pain usually spreads across the lower back, and might feel like a muscle strain.

Spondylolisthesis can also cause muscle spasms in the hamstring muscles in the back of the thighs. Tight hamstrings can cause the person to walk with short strides and with the knees slightly bent. If the slipped vertebra is pressing on a nerve, pain might spread down the leg to the foot. The foot might also tingle and/or feel numb.

How is spondylolisthesis graded?

A radiologist determines the degree of slippage upon reviewing spinal X-rays. Slippage is graded I through IV:

- Grade I — 1 percent to 25 percent slip
- Grade II — 26 percent to 50 percent slip
- Grade III — 51 percent to 75 percent slip
- Grade IV — 76 percent to 100 percent slip

Generally, Grade I and Grade II slips do not require surgical treatment and are treated medically. Grade III and Grade IV slips might require surgery if persistent, painful, slips are present.

How is spondylolisthesis diagnosed?

An X-ray of the lower back can show a vertebra out of place. A computed tomography (CT) or magnetic resonance imaging (MRI) scan — which produce more detailed images — might be needed to more clearly see the bones and nerves involved.

How is spondylolisthesis treated?

Treatment for spondylolisthesis depends on several factors, including the age and overall health of the person, the extent of the slip, and the severity of the symptoms. Treatment most often is conservative, involving rest, medication, and exercise. More severe spondylolisthesis might require surgery.

- **Conservative treatment** — The person should take a break from sports and other activities until the pain subsides. An over-the-counter non-steroidal anti-inflammatory drug (NSAID), such as ibuprofen (Motrin®) or naproxen (Aleve® or Naprosyn®), might be recommended to help reduce pain and inflammation (irritation and swelling). Stronger medications might be prescribed if the NSAIDs do not provide relief. Epidural steroid injections — in which medication is placed directly in the space surrounding the spine — might also help reduce inflammation and ease pain.

A brace or back support might be used to help stabilize the lower back and reduce pain. A program of exercise and/or physical therapy will help increase pain-free movement, and improve flexibility and muscle strength. Periodic X-rays are done to determine if the bone slippage is continuing.

- **Physical therapy** — Stabilization exercises are the mainstay of treatment. These exercises strengthen the abdominal and/or back muscles, minimizing bony movement of the spine. Generally, eight to 12 weeks of aggressive daily treatment with stabilization exercises are needed to achieve clinical improvement.
- **Surgery** — Surgery might be necessary if the vertebra continues to slip or if the pain is not relieved by conservative treatment and begins to interfere with daily activities. The main goals of surgery for spondylolisthesis are to relieve the pain associated with an irritated nerve, to stabilize the spine where the vertebra has slipped out of place, and to increase the person's ability to function.
- Usually two surgical procedures are used to treat spondylolisthesis. The first procedure is a **decompressive laminectomy**, which involves removing the part of the bone that is pressing on the nerves. Although this procedure can reduce pain, removing a piece of bone can leave the spine unstable.
- The second procedure, called **spinal fusion**, is performed to provide stability. In a fusion, a piece of bone is transplanted to the back of the spine. As the bone heals, it fuses with the spine — creating a solid mass of bone — keeping the spine from moving and stabilizing it. In some cases, instruments such as rods or screws are used to hold the vertebra firm as the fusion heals.

What complications are associated with spondylolisthesis?

Persistent pain associated with spondylolisthesis can lead to reduced mobility and inactivity. Inactivity can, in turn, result in weight gain, loss of bone density, and loss of muscle strength and flexibility in other areas of the body. There is also a risk of permanent nerve damage if a slipped vertebra is pressing on a spinal nerve root.

What is the outlook for people with spondylolisthesis?

The chance of having a recurrence of pain depends on the severity of the spondylolisthesis. In the case of a minor slip, where the bone is not pressing on any nerves, the person might never have a recurrence of back pain related to spondylolisthesis.

In general, conservative treatment for mild cases of spondylolisthesis is successful in about 80 percent of cases. Surgery is successful in relieving symptoms in 85 percent to 90 percent of people with severe spondylolisthesis.

Can spondylolisthesis be prevented?

Although spondylolisthesis might not be preventable, there are steps you can take to reduce the risk of slips:

- Keep your back and abdominal muscles strong to help support and stabilize the lower back.
- Choose activities and sports that do not place your lower back at risk for injury. Swimming and biking are possible options.
- Maintain a healthy weight. Excess weight puts added stress on your lower back.
- Eat a well-balanced diet to keep your bones well-nourished and strong.

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